

REMARKS/ARGUMENTS

Claims 1, 3, 21, and 25 are amended. Claims 2, 13 and 18-20 are canceled. Claims 27 to 39 are added. Claims 1, 3-12, 14-17, and 21-39 are pending.

The Examiner objected to claim 25. Claim 25 has been amended accordingly.

The Examiner rejected claims 1 and 21 under 35 U.S.C. 102(e) as being anticipated by Chung et al. (US 6,750,150 B2).

Claim 1 has been amended to incorporate the limitations of claim 2, which has been canceled. For at least this reason, claim 1, as amended, is not anticipated by Chung.

Claim 21 has been amended to recite that the substrate is placed in a plasma processing chamber and that the depositing the conformal layer and etching the conductive layer occurs in the same plasma processing chamber. Depositing the conformal layer and etching the conductive layer in the same chamber is not disclosed by Chung. For at least these reasons, claim 21 is not anticipated by Chung.

The Examiner rejected claim 21 under 35 U.S.C. 102(b) as being anticipated by Yang (US 5,296,410).

Claim 21 has been amended to recite that the substrate is placed in a plasma processing chamber and that the depositing the conformal layer and etching the conductive layer occurs in the same plasma processing chamber. Depositing the conformal layer and etching the conductive layer in the same chamber is not disclosed by Yang. For at least these reasons, claim 21, as amended, is not anticipated by Yang.

The Examiner rejected claims 2-6, 9-12, and 14-17 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2) in view of Kinoshita et al. (US 6,780,708 B1) and Ahn et al. (US 6,740,977 B2).

Claim 1 has been amended to incorporate the limitations of claim 2, which as been canceled. The formation of a conformal layer by a first and second deposition of first and second gas chemistries is not made obvious by the cited references. The Examiner agrees that this is not taught by Chung.

The Examiner stated that Kinoshita teaches the formation of a conformal layer spacer (46d) on the sidewalls of the mask layer (34a) and teaches that silicon oxide layers and silicon nitride and other nitrides can be deposited using processes selected from the group including PECVD and ALD (col. 8, line 44, to col. 10, line 5 of Kinoshita). Col. 8, line 44, to col. 10, line 5, of Kinoshita does not teach forming the conformal layer spacer (46d) using a first and second chemistry, as recited in claim 1, as amended, and in claim 14.

The Examiner further cited Ahn as teaching depositing silicon nitride and boron nitride films using remote plasma ALD in order to improve resistance of layers against moisture. Ahn does not teach or make obvious the formation of a conformal layer by a first deposition and a second deposition.

Therefore, none of the references teaches the formation of a conformal layer with a first deposition chemistry and a second deposition chemistry.

In addition, it would not be obvious to combine Ahn with the other references. The Examiner cited the improved resistance of the layers against moisture as the motivation to combine Ahn. However, the conformal layer is stripped away with the mask in the current application. Therefore, there is not motivation to have improved resistance against moisture.

For at least these reasons, claims 1, as amended, and 14 are not made obvious by Kung in view of Kinoshita and Ahn.

The Examiner rejected claims 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2) in view of Kinoshita et al. (US 6,780,708 B1) and Ahn et al. (US 6,740,977 B2) and in further view of Yamamoto et al. (US 4,151,034).

The Examiner rejected claims 22 to 24 under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 6,750,150 B2).

The Examiner rejected claim 25 under 35 U.S.C. 103(a) as being unpatentable over Yang (US 5,296,410).

Dependent claims 3-12, 15-17, and 22-26 are also patentably distinct from the cited references for at least the same reasons as those recited above for the independent claims, upon which they ultimately depend. These dependent claims recite additional limitations that further distinguish these dependent claims from the cited references. For example, claims 7 and 8 recite

stripping the photoresist mask and conformal layer with a single stripping step. The Examiner cited col. 1, lines 7-17, of Yamamoto as teaching such a single stripping step. Yamamoto, col. 1, lines 7-17, discloses that a gas plasma for etching silicon nitride or ashing photoresist. However, Yamamoto does not teach stripping a photoresist and conformal layer in a single step. The silicon nitride in Yamamoto is not stripped, but instead etched. If such etching was performed during the strip, the silicon oxide would also be etched, which is undesirable. Claim 7 does not recite a simultaneous stripping and etching, but instead stripping a conformal layer and a photoresist mask in a single step. For at least these reasons, claims 3-12, 15-17, and 22-26 are not anticipated by Chu.

New claims 27, 30, 33, and 36 also recited that the conformal layer and mask are simultaneously stripped while the substrate is in the plasma processing chamber. This is supported on page 9, lines 26 to 29, of the current application.

New claims 28, 31, 34, and 37 further recite that the conformal layer provides no layer deposited on the bottom of the photoresist feature. This is supported on page 8, lines 22 to 23, and FIG. 3B of the application. The cited references leave a layer on the bottom of the photoresist feature.

New claims 29, 32, and 35, further recite placing the substrate in a plasma processing chamber where the forming the conformal layer and etching are done in the plasma processing chamber.

New claims 38 and 39 further recite that the first deposition is selected from the group of a bread-loading deposition a faceting deposition and the second deposition is selected from the group of the group of a bread loading deposition and a faceting deposition, where the first deposition and second deposition are not both bread loading depositions and are not both faceting depositions. This is supported on page 13, lines 4 to 23, of the current application.

Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a

telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number (650) 961-8300.

Respectfully submitted,

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